§ 10.305 Radar-Observer certificates and qualifying courses.

(a) A student who takes an approved course of training, which includes passing both a radar-theory examination and a practical demonstration on a simulator, and who meets the requirements of this section is entitled to an appropriate Radar-Observer certificate—

(1) In a form prescribed by the school and acceptable to the Coast Guard; and

(2) Signed by the head of the school.

(b) The following Radar-Observer certificates are issued under this section:

(1) Radar Observer (Unlimited).

(2) Radar Observer (Inland Waters and Gulf-Intracoastal Waterway [GIWW]).

(3) Radar Observer (Rivers).

(4) Radar Observer (Unlimited: Renewal).

(5) Radar Observer (Inland Waters and GIWW: Renewal).

(6) Radar Observer (Rivers: Renewal).

(c) A school with an approved Radar-Observer course may issue a certificate listed in paragraph (b) of this section after the student has successfully completed the appropriate curriculum as follows:

(1) Radar Observer (Unlimited). Classroom instruction—including demonstration and practical exercises using simulators—and examination, in the following subjects:

(i) Fundamentals of radar:

(A) How radar works.

(B) Factors affecting the performance and accuracy of marine radar.

(C) Purposes and functions of the main components that constitute a typical marine-radar system.

(ii) Operation and use of radar:

(A) Purpose and adjustment of controls.

(B) Detection of malfunctions, false and indirect echoes, and other radar phenomena.

(C) Effects of sea return, weather, and other environmental conditions.

(D) Limitations of radar resulting from design factors.

(E) Safety precautions associated with use and maintenance of marine radar.

(F) Measurement of ranges and bearings.

(G) Effect of size, shape, composition, and distance of vessels and terrestrial targets on echo.

(iii) Interpretation and analysis of radar information:

(A) Radar navigation (including visual techniques)—determining positions, and detecting changes in the relative motion, of other vessels.

(B) Collision-avoidance, including visual techniques, appropriate to the circumstances and the equipment in use.

(C) Determining the course and speed of another vessel.

(D) Determining the time and distance of closest point of approach of a crossing, meeting, overtaking, or overtaken vessel.

(E) Detecting changes of course or speed of another vessel after its initial course and speed have been established.

(F) Applying the Navigational Rules, Chapters 30 and 34 of Title 33 U.S. Code [Commandant Instruction M16672.2C, as amended, or equivalent], and other factors to consider when determining changes of course or speed of a vessel to prevent collisions on the basis of radar observation.

(G) Use of radar in maintaining situational awareness.

(iv) Plotting (by any graphically-correct method):

(A) Principles and methods of plotting relative and true motion.

(B) Practical-plotting problems.

(2) Radar Observer (Inland Waters and GIWW). Classroom instruction—with emphasis on situations and problems encountered on inland waters and the GIWW, including demonstration and practical exercises using simulators—and examination, in the following subjects:

(i) Fundamentals of radar:

(A) How radar works.

(B) Factors affecting the performance and accuracy of marine radar.

(C) Purpose and functions of the main components that constitute a typical marine-radar system.

(ii) Operation and use of radar:

(A) Purpose and adjustment of controls.

(B) Detection of malfunctions, false and indirect echoes, and other radar phenomena.

(C) Effects of sea return, weather, and other environmental conditions.

(D) Limitations of radar resulting from design factors.

(E) Safety precautions associated with use and maintenance of marine radar.

(F) Measurement of ranges and bearings.

(G) Effect of size, shape, composition, and distance of vessels and terrestrial targets on echo.

(iii) Interpretation and analysis of radar information:

(A) Radar navigation (including visual techniques)—determining positions, and detecting changes in the relative motion, of other vessels.

(B) Collision-avoidance, including visual techniques, appropriate to the circumstances and the equipment in use.

(C) Determining the course and speed of another vessel.

(D) Determining the time and distance of closest point of approach of a crossing, meeting, overtaking, or overtaken vessel.

(E) Detecting changes of course or speed of another vessel after its initial course and speed have been established.

(F) Applying the Navigational Rules, and other factors to consider when determining changes of course or speed of a vessel to prevent collisions on the basis of radar observation.

(G) Use of radar in maintaining situational awareness.

(3) Radar Observer (Rivers). Classroom instruction—with emphasis on situations and problems encountered on rivers, including demonstration and practical exercises using simulators—and examination, in the following subjects:

(i) Fundamentals of radar:

(A) How radar works.

(B) Factors affecting the performance and accuracy of marine radar.

(C) Purpose and functions of the main components that constitute a typical marine-radar system.

(ii) Operation and use of radar:

(A) Purpose and adjustment of controls.

(B) Detection of malfunctions, false and indirect echoes, and other radar phenomena.

(C) Effects of sea return, weather, and other environmental conditions.

(D) Limitations of radar resulting from design factors.

(E) Safety precautions associated with use and maintenance of marine radar.

(F) Measurement of ranges and bearings, recognizing limited use of radar bearings in curving, narrow channels.

(G) Effect of size, shape, composition, and distance of vessels and terrestrial targets on echo.

(iii) Interpretation and analysis of radar information:

(A) Radar navigation (including visual techniques)— determining positions, and detecting changes in the relative motion, of other vessels.

(B) Collision-avoidance, including visual techniques, appropriate to the circumstances and the equipment in use.

(C) Applying the Navigational Rules, and other factors to consider when determining changes of course or speed of a vessel to prevent collisions on the basis of radar observation.

(D) Use of radar in maintaining situational awareness.

(4) Radar Observer (Unlimited: Renewal). Classroom instruction—including demonstration and practical exercises using simulators—and examination, in the following subjects:

(i) Interpretation and analysis of radar information:

(A) Radar navigation (including visual techniques)—determining positions, and detecting changes in the relative motion, of other vessels.

(B) Collision-avoidance, including visual techniques, appropriate to the circumstances and the equipment in use.

(C) Determining the course and speed of another vessel.

(D) Determining the time and distance of closest point of approach of a crossing, meeting, overtaking, or overtaken vessel.

(E) Detecting changes of course or speed of another vessel after its initial course and speed have been established.

(F) Applying the Navigational Rules, and other factors to consider when determining changes of course or speed of a vessel to prevent collisions on the basis of radar observation.

(G) Use of radar in maintaining situational awareness.

(ii) Plotting (by any graphically-correct method):

(A) Principles and methods of plotting relative and true motion.

(B) Practical-plotting problems.

(5) Radar Observer (Inland Waters and GIWW: Renewal). Classroom instruction—including demonstration and practical exercises using simulators—and examination, in the interpretation and analysis of radar information, including:

(i) Radar navigation (including visual techniques—determining positions, and detecting changes in the relative motion, of other vessels.

(ii) Collision-avoidance, including visual techniques, appropriate to the circumstances and the equipment in use.

(iii) Determining the course and speed of another vessel.

(iv) Determining the time and distance of closest point of approach of a crossing, meeting, overtaking, or overtaken vessel.

(v) Detecting changes of course or speed of another vessel after its initial course and speed have been established.

(vi) Applying the Navigational Rules, and other factors to consider when determining changes of course or speed of a vessel to prevent collisions on the basis of radar observation.

(vii) Use of radar in maintaining situational awareness.

(6) Radar Observer (Rivers: Renewal). Classroom instruction—including demonstration and practical exercises using simulators—and examination, in the interpretation and analysis of radar information, including:

(i) Radar navigation (including visual techniques)— determining positions, and detecting changes in the relative motion, of other vessels.

(ii) Collision-avoidance, including visual techniques, appropriate to the circumstances and the equipment in use.

(iii) Applying the Navigational Rules, and other factors to consider when determining changes of course or speed of a vessel to prevent collisions on the basis of radar observation.

(iv) Use of radar in maintaining situational awareness.

[CGD 94–041, 62 FR 11303, Mar. 11, 1997]

§ 10.306 Radar-Operation course and certificate.

(a) A certificate of training from a Radar-Operation course may, as provided by 46 CFR 15.815(c)(2), suffice instead of a Radar-Observer endorsement. It is valid until the holder's license is renewed or upgraded, or expires, whichever occurs first.

(b) Each Radar-Operation course must contain at least 4 hours of instruction on the following subjects:

(1) Fundamentals of radar:

(i) How radar works.

(ii) Factors affecting the performance and accuracy of marine radar.

(iii) Purpose and functions of the main components that constitute a typical marine-radar system.

(2) Operation and use of radar:

(i) Purpose and adjustment of controls.

(ii) Detection of malfunctions, false and indirect echoes, and other radar phenomena.

(iii) Effects of sea return, weather, and other environmental conditions.

(iv) Limitations of radar resulting from design factors.

(v) Safety precautions associated with use and maintenance of marine radar.

(vi) Measurement of ranges and bearings.

(vii) Effect of size, shape, composition, and distance of vessels and terrestrial targets on echo.

(3) Interpretation and analysis of radar information:

(i) Radar navigation—determining the position and direction of movements of a vessel.

(ii) Collision-avoidance, including visual techniques, appropriate to the circumstances and the equipment in use.

(iii) Applying the Navigational Rules, Chapters 30 and 34 of Title 33 U.S. Code [Commandant Instruction M16672.2C or equivalent, as amended], and other factors to consider when determining changes of course or speed of a vessel to prevent collisions on the basis of radar observation.